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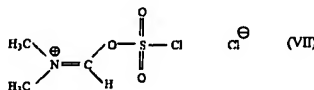
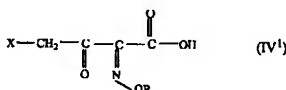
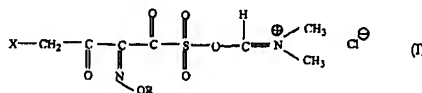
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ning of each regular issue of the PCT Gazette.

(54) Title: NOVEL INTERMEDIATES FOR SYNTHESIS OF CEPHALOSPORINS AND PROCESS FOR PREPARATION OF SUCH INTERMEDIATES



(57) Abstract: A novel 4-halo-2-oxyimino-3-oxo butyric acid-N, N-dimethyl formiminium chloride chlorosulfate of formula (I) useful in the preparation of cephalosporin antibiotics, wherein X is chlorine or bromine; R is hydrogen, C<sub>1-4</sub> alkyl group, an easily removable hydroxyl protective group, -CH<sub>2</sub>COOR<sub>5</sub>, or -C(CH<sub>3</sub>)<sub>2</sub>COOR<sub>5</sub>, wherein R<sub>5</sub> is hydrogen or an easily hydrolysable ester group. The compound of formula (I) is prepared by reacting 4-halo-2-oxyimino-3-oxobutyric acid of formula (IV<sup>1</sup>), wherein X, R and R<sub>5</sub> are as defined above, with N, N-dimethylformiminium chloride chlorosulphate of formula (VII), in an organic solvent at a temperature ranging from -30 °C to -15 °C. The cephalosporins that may be prepared from the intermediate include cefdinir, cefditoren pivoxil, cefepime, cefetamet pivoxil, cefixime, cefmenoxime, cefodizime, cefoselis, cefotaxime, cefpirome, cefpodoxime proxetil, cefquinome, ceftazidime, ceftaram pivoxil, ceftiofur, ceftizoxime, ceftriaxone and cefuzonam.

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